REMARKS

Claims 1-9 are pending in the present patent application. Claims 1-9 have been rejected.

Claims 1-6 and 8-9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,993,755 to Redanz (hereafter referred to as Redanz) in view of U.S. Patent 3,902,917 to Baresel et al. (hereafter referred to as Baresel).

According to the present Office Action, Redanz at column 2, lines 54-56 teaches a process for making tungstic acid wherein ammonium paratungstate is mixed with chemically pure hydrochloric acid (col. 2, lines 46-52) and then decanted with water in order to form a precipitate of tungstic acid. According to the present Office Action, tungstic acid is hydrated tungsten trioxide (Redanz, col. 2, lines 53-56). According to the Office Action, Redanz fails to teach that the hydrochloric acid comprises an aqueous solution of about 35-38 weight percent of hydrochloric acid. Redanz also fails to teach a method for preparing anhydrous WO_2 nanopowder that comprises heating a precipitate of WO_3H_2O (hydrated tungsten trioxide) at a temperature of 200°C to 400°C. According to the Office Action, Baresel teaches a process for making finely divided WO_3 (col. 4, lines 45-48) wherein ammonium tungstate is mixed with concentrated hydrochloric acid (37% by weight, col. 4, lines 30-33) for the purpose of forming tungstic acid hydrate (col. 4, lines 40-43). According to the Office Action, finely divided inherently teaches nanopowder. Also according to the Office Action, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide [a method] wherein ammonium tungstate is mixed with concentrated hydrochloric acid (37% by weight, col. 4, lines 30-33) in Redanz in order to form tungstic acid hydrate (col. 4, lines 40-43) as taught by Baresel.

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Redanz in view of Barasel and Sato et al. (U.S. Patent 3,452,100, hereafter referred to as Sato). According to the present Office Action, Redanz teaches a process for making tungstic acid wherein ammonium paratungstate is mixed with chemically pure hydrochloric acid and then decanted with water in order to form a precipitate of tungstic acid. Redanz fails to teach that the hydrochloric acid comprises an aqueous solution of about 35-38 weight percent of hydrochloric acid, and that the method for preparing

anhydrous WO_3 nanopowder comprises heating a precipitate of WO_3H_2O (hydrated tungsten trioxide) at a temperature of 200 degrees Celsius to 400 degrees Celsius and wherein the WO_3 nanopowder is reacted with hydrogen gas to form WO_2. According to the Office Action, Baresel teaches a process for making finely divided WO_3 wherein ammonium tungstate is mixed with concentrated hydrochloric acid for the purpose of forming tungstic acid, and that it would have been obvious to one or ordinary skill in the art at the time Applicant's invention was made to provide wherein ammonium tungstate is mixed with concentrated hydrochloric acid in Redanz in order to form tungstic acid hydrate as taught by Baresel.

Applicant respectfully disagrees.

Claims 1, 2, and 3 of the present patent application are drawn to a solution of ammonium paratungstate and hydrochloric acid. Claims 4, 5, 6, and 7 are drawn to a method that involves first making a solution of ammonium paratungstate and hydrochloric acid, and then using the solution to produce other materials. Claim 4 involves preparing a solution of ammonium paratungstate and hydrochloric acid, and then adding water to the solution to form a precipitate. Claim 5 involves preparing a solution of ammonium paratungstate and hydrochloric acid, then adding water to the solution to form a precipitate, and then heating the precipitate. Claim 7 involves preparing a solution of ammonium paratungstate and hydrochloric acid, then adding water to the solution to form a precipitate, then heating the precipitate, then reacting the precipitate with hydrogen gas. Claim 8 of the present patent application is concerned with tungsten trioxide hydrate prepared by first preparing a solution of ammonium paratungstate and hydrochloric acid, and then adding water to the solution. Thus, claims 1-6 and 8 are all concerned with a solution of ammonium paratungstate and hydrochloric acid, with preparing such a solution and/or subsequently using the solution. Neither Redanz nor Baresel, alone or in combination, teach Applicant's claimed invention because neither Redanz nor Barasel, alone or in combination, teach the preparation of a solution of ammonium paratungstate and hydrochloric acid. According to Redanz, EXAMPLE 3, ammonium paratungstate is added to water to form a slurry. This slurry is heated and then added to concentrated hydrochloric acid. The addition of the slurry to the hydrochloric acid does not result in the production of a

solution, but instead results in the production of yet another slurry. A slurry is not a solution. A slurry has a solid phase and a liquid phase. A solution has only a liquid phase. Redanz does not teach the preparation of a solution of ammonium paratungstate in hydrochloric acid. With regard to Baresel, EXAMPLE 1, which begins at column 4, line 22, a solution of ammonium tungstate is prepared by adding 50 grams of tungstic acid (H_2WO_4) to 100 milliliters of warm ammonium hydroxide solution (containing 25% NH_3 by weight) that was diluted with 100 milliliters of water and stirred until the tungstic acid was dissolved. This solution was cooled to a temperature of between 0 degrees Celsius and 25 degrees Celsius, and concentrated hydrochloric acid was added to this cold, stirred solution. The addition of the concentrated hydrochloric acid did not result in the formation of a solution, but instead resulted in the formation of a precipitate. So Baresel also does not teach the preparation of a solution of ammonium paratungstate and hydrochloric acid. Neither Redanz nor Barasel, alone or in combination, teach the preparation of a solution of ammonium paratungstate and hydrochloric acid. By contrast, Applicant teaches the preparation of a solution of ammonium paratungstate and hydrochloric acid. Applicant prepared a solution by dissolving ammonium paratungstate (not a solution thereof or a slurry thereof, but solid ammonium paratungstate) and hydrochloric acid. Applicant's claimed invention does not involve using a solution of, or a slurry of, ammonium paratungstate because the additional water present in such a solution or slurry promotes the formation of a precipitate. Only after preparing the solution first is additional water added to promote the formation of a precipitate. By contrast, Redanz uses a slurry of ammonium paratungstate, and Baresel prepares a precursor aqueous solution that is subsequently mixed with hydrochloric acid, not to form a solution of ammonium paratungstate and hydrochloric acid, but instead to form a precipitate. Clearly, neither Redanz nor Baresel, either alone or in combination, teaches a solution of ammonium paratungstate and hydrochloric acid.

Applicant also wishes to point out that although tungstic acid and hydrated tungsten trioxide have the same number and kind of atoms, they are not the same material. Tungstic acid is a covalent compound with a tungsten atom, four oxygen atoms, and two hydrogen atoms. Each hydrogen atom is covalently bound to an oxygen

atom that is bound to the tungsten atom. By contrast, the two hydrogen atoms in tungsten trioxide hydrate are bonded to a single intact molecule of water.

Finally, Applicant submits that the phrase "finely divided" does not inherently teach nanopowder. Nanosized specifically refers to particles having dimensions less than 1 micrometer. Finely divided might be associated with powder particles that are millimeter sized, or micron sized, or nanosized.

For the above reasons, Applicant submits that claims 1-6 and 8 are not obvious over Redanz in view of Baresel, and that claim 7 is not obvious over Redanz in view of Baresel and Sato. Applicant respectfully requests that the rejection of claims 1-8 under 35 U.S.C. 103(a) be withdrawn.

Claim 9 has been rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent Application 2002/0005145 to Sherman (hereafter referred to as Sherman). According to the present Office Action, Sherman teaches a photocatalyst of tungsten oxide particles. The Office Action also states that tungsten trioxide is equivalent to tungsten trioxide hydrate and cites Sherman at paragraph 0208, lines 1-3. The Office Action also states that Sherman teaches tungsten oxide platelets, and cites Sherman at paragraph 0209, lines 10-12. The Office Action also states that if Sherman does not teach that tungsten trioxide hydrate inherently has a platelet morphology, then it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide for that tungsten trioxide hydrate has a platelet morphology because tungsten trioxide and tungsten trioxide hydrate are similar materials.

Applicant respectfully disagrees.

Sherman does not teach hydrated tungsten oxide. Sherman does not teach that tungsten oxide and tungsten oxide hydrate are equivalent materials, nor does Sherman teach that tungsten oxide and/or tungsten oxide hydrate particles have a platelet morphology. Sherman does provide a list of compounds and a list of shapes, but Sherman does not correlate any of the compounds with any of the shapes from the two lists. In particular, Sherman does not teach nanosized platelets of tungsten oxide, nor does Sherman teach nanosized platelets of hydrated tungsten oxide. By contrast, Applicant teaches both hydrated and anhydrous tungsten oxide nanopowder particles

where both the hydrated and anhydrous particles have a platelet morphology. Applicant wishes to point out that it is not typical for an anhydrous material and the chemically hydrated material to have the same morphology. Only by obtaining images of the particles at high magnification could one tell what the morphology is. In this case, unexpectedly, the morphology for the anhydrous tungsten oxide and the hydrated tungsten oxide is the same platelet type morphology.

Applicant has added new claim 10, which claims tungsten trioxide nanopowder whose particles have a platelet morphology.

Applicant is submitting a supplementary information disclosure statement with this response.

Applicant respectfully requests that this amendment be entered into the present patent application.

For the reasons set forth above, Applicant believe that all currently pending claims are in condition for allowance, and such action at an early date is earnestly solicited. No new matter has been added by the above changes. Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

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